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FOR

METHOD AND APPARATUS FOR PEOPLE TO SIMPLY COMMUNICATE  
THEIR LOCATION AND ACTIVITY

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METHOD AND APPARATUS FOR PEOPLE TO SIMPLY COMMUNICATE  
THEIR LOCATION AND ACTIVITY INFORMATION

FIELD OF THE INVENTION

5           The present invention relates to the fields of wireless communication devices and related devices. More specifically, the present invention relates to people (especially younger people) communicating their location and activity information via wireless communication.

10       BACKGROUND OF THE INVENTION

Advances in computer and telecommunication technology have led to wide spread adoption of mobile client devices, from the basic wireless telephones to function rich notebook sized computers that pack the power of a desktop computer. In between are web enabled wireless telephones, palmed  
15 sized personal digital assistants and so forth. As a result of the relatively low cost, today even youths, i.e., people who are not emancipated, are in possession of these devices.

Often times, these youths would find themselves in need of certain services such as the basic need of calling their parents/guardians and letting  
20 them know where they are or letting their friends know where they are in malls or around town. Under the prior art, i.e., the web enabled wireless telephones, palmed sized personal digital assistants and so forth, even though it may be a few key strokes to make the phone call, youths often find is too cumbersome to

make the call. Moreover, because of the number of keystrokes, the call cannot be placed discretely without being noticed by their peers, who often deems having to call and inform one's parents of one's whereabouts is especially "uncool".

5           Furthermore, under the prior art, even if youths are willing to make the call, youths would have to determine their current address/location. The added layer of difficulty just gives youths another excuse not to call.

10           In the mean time, in order to learn the current address/location of the youths, parents/guardians most likely have to call them or their friends, and this may cause the youths to be embarrassed and/or defensive due to their disposition against being constantly checked up on.

15           As a result, despite the advances in technology today, this prior art process is not youth friendly and may cause tension between youths and parents/guardians. Thus, a need exist for a more simple and efficient/effective approach for youths to notify their parents/guardians and each other of their whereabouts, and a non-intrusive approach for knowing the activities of the youths by the parents/guardians for their piece of mind.

SUMMARY OF THE INVENTION

A mobile client device, on behalf of a user, is equipped to submit an identity of the user to a messaging service, including the user's current location, with reduced number of keystrokes; in one embodiment, using a single function button. Once the messaging service receives the identity of the user, and the user's current location, the messaging service, in response, selects one or more eligible recipients from a list of candidate recipients to receive the user's current location, based at least in part on the identity of the user. The selected recipients, remotely disposed from the messaging service, receive the identity of the user and the user's current location for information purposes. The identity of the user and the user's current location may be transmitted to the selected remote recipients in any one of a number of message formats, using any one of a number of communication protocols. As a result, users, in particular, youths, are able to notify to recipients of interest to the users, such as their parents/guardians, of their whereabouts simply, efficiently and effectively.

Additionally, in some embodiments, the user's current location is provided with previously visited locations, together forming an activity log of the user.

Further, in some embodiments, certain eligible recipients, such as parents/guardians, are enabled to initiate receipt of a user's current location, or the user's activity log. As a result, parents/guardians are provided a non-intrusive way of keeping track of the locations and the activities of the youths for their peace of mind.

In yet other embodiments, the submission of the user's current location is triggered based at least in part on bio-metric data, such as the user's heart rate. In preferred ones of these embodiments, the submission includes selected ones of the bio-metric data.

- 5           In various embodiments, the user's client device may be a wireless telephone or a palm sized computing device.

#### BRIEF DESCRIPTION OF DRAWINGS

- 10           The present invention is illustrated by way of example and not by way of limitation in the figures of the accompanying drawings, in which the like references indicate similar elements and in which:

**Figure 1** illustrates an overview of the present invention, in accordance with one embodiment;

- 15           **Figure 2** illustrates a method view of the present invention in accordance with one embodiment;

**Figures 3 and 4** illustrate a perspective and architectural view of an enhanced wireless telephone incorporated with the teachings of the present invention, in accordance with one embodiment;

- 20           **Figure 5** illustrates the operational flow of the relevant aspects of enhanced wireless location application **416**, in accordance with one embodiment;

**Figures 6 and 7** illustrate a perspective and architectural view of an enhanced palm sized computing device incorporated with the teachings of the present invention, in accordance with one embodiment;

**Figure 8** illustrates the operational flow of the relevant aspects of the wireless web application of **Fig. 7**, in accordance with one embodiment;

**Figure 9** illustrates an example server suitable for use to host messaging service **104** of **Fig. 1**, in accordance with one embodiment;

**Figure 10** illustrates a data structure suitable for use to store data associated with identity of users and mobile client devices and recipients to facilitate practice of the present invention; and

**Figure 11** illustrates the operational flow of the relevant aspect of messaging service **104**, in accordance with one embodiment.

DETAILED DESCRIPTION OF THE INVENTION

In the following description, various aspects of the present invention will be described. However, it will be apparent to those skilled in the art that the present invention may be practiced with only some or all aspects of the present invention. For purposes of explanation, specific numbers, materials and configurations are set forth in order to provide a thorough understanding of the present invention. However, it will also be apparent to one skilled in the art that the present invention may be practiced without the specific details. In other instances, well known features are omitted or simplified in order not to obscure the present invention.

Parts of the description will be presented using terms such as end-user interfaces, buttons, and so forth, commonly employed by those skilled in the art to convey the substance of their work to others skilled in the art. Parts of the description will be presented in terms of operations performed by a computing device, using terms such as submitting, requesting, selecting, confirming and so forth. As well understood by those skilled in the art, these quantities and operations take the form of electrical, magnetic, or optical signals capable of being stored, transferred, combined, and otherwise manipulated through mechanical and electrical components of a digital system. The term digital system includes general purpose as well as special purpose computing machines, systems, and the like, that are standalone, adjunct or embedded.

Various operations will be described in turn in a manner that is most helpful in understanding the present invention, however, the order of description should

not be construed as to imply that these operations are necessarily order dependent. Furthermore, the phrase "in one embodiment" will be used repeatedly, however the phrase does not necessarily refer to the same embodiment, although it may.

5 Referring now to **Figures 1 and 2**, wherein a block diagram illustrating an overview and a method view of the present invention in accordance with one embodiment are shown. As illustrated, a user, using a mobile client device **102**, initiates submission of an identity of the user, block **202**. In response, client device **102** notifies messaging service **104** of the submission of identity of the  
10 user, including in particular, the user's current location, block **204**. The submission of the identity of the user, including the user's current location, may be communicated to the messaging service **104**, via a wireless or wire line based communication link **108**, using any one of a number of communication protocols (such as TCP/IP) known in the art.

15 In one embodiment, the messaging service **104** accumulates the successively provided current locations, thereby forming an activity log of the user. As will be described later, the activity log may also include duration of time spent at the visited locations. In one embodiment, the activity log is updated each time the messaging service **104** is contacted with the user's current  
20 location. Alternatively, in one embodiment, the activity log may first be accumulated at the mobile client device **102** with the accumulated log being downloaded to the messaging service during one of the submissions of the user's current location. The accumulated activity log may then be subsequently



transmitted to a recipient requiring such information, such as a parent/guardian of the user.

In one embodiment, the identity of the user may be signed, to facilitate authentication of the identity as the intended user of the mobile client device.

5        Messaging service **104** enhanced with the teachings of the present invention, in turn, selects one or more recipients **106**, based at least on the identity of the user (after authentication, if the identity is signed), block **206**. As will be described in detail later, the selection may be made from a predetermined table of identities of users having corresponding eligible recipients. Eligible  
10 recipients of a user are pre-established with messaging service **104**. Recipients' eligibility may vary, some permanently, some for a finite duration. In addition to the basic delivery information, such as the preferred delivery format, i.e. email, fax and so forth, and the duration of the recipients' eligibility, recipients may also be associated with various selection attributes. Establishments of these recipient  
15 "properties" may be performed by the user while registering with messaging service **104**, or updated periodically thereafter. Registration and the subsequent updates may be facilitated using any one of a number of user interaction techniques known in the art.

20        In other embodiments, the selection may also be based on other criteria, such as intended recipients manually inputted by the user in the mobile client device to direct the messaging service to select those manually inputted recipients. Additionally, the manually inputted recipients may be recipients in addition to the recipients selected by the messaging service. In this manner,

recipients of the identity of the user and the user's current location are controlled without allowing wide dissemination of such information. For example, the manually inputted recipient may be a temporal companion of the user, where the user is trying to indicate to the temporal companion his/her location in a shopping  
5 mall, i.e., the two were to meet some place in the shopping mall, and they would like to know the current location of the each other.

In one embodiment, certain eligible recipients may be enabled to initiate submission of the identity of the user instead of the user initiating the submission. Again, such ability may be defined as a "property" of the eligible recipients. For  
10 example, a parent/guardian may want to know the locations and activities of their children without having to contact them. Accordingly, a user may pre-enable his/her parent/guardian to be able to initiate receipt of the user's current location or activity log.

Upon "selection" (i.e. either by the user or messaging service, as a result  
15 of the user or the recipient's initiation), messaging service 104 transmits the identity of the user, including last known location, and optionally, the previously visited locations, i.e. the activity log, to the selected recipient 106, block 206. The transmission may be made in the form of an email, a pager message, a facsimile transmission, and other electronic messages through communication  
20 link 110, which may be a wireless or wire line based communication link, using any one of a number of communication protocols known in the art. .

In one embodiment, the user may manually restrict dissemination of the activity log. For example, a user would not desire to have a companion, such as a friend, acquire such information regarding their activities.

Alternatively, in one embodiment, the user may not manually restrict the dissemination of the activity log. For example, a selected recipient, such as a parent/guardian, may require such information at all times.

As a result, youths are able to notify to their parents/guardians and each other of their whereabouts simply and efficiently/effectively. Additionally, parents/guardians are provided a non-intrusive way of keeping track of the locations of the activities of the youths for their peace of mind.

**Figures 3 and 4** illustrate a perspective and an architectural view of an enhanced wireless telephone as a client device for practicing the present invention, in accordance with one embodiment. As illustrated, similar to a conventional wireless telephone, wireless telephone **300** includes key-pad **302**, "talk" and "end talk" buttons **304**, cursor control buttons **306**, and display screen **308**. However, unlike prior art wireless telephones, wireless telephone **300** is equipped with a dedicated "Here I Am" function button **310** (hereinafter, simply "Here I Am" button. In alternate embodiments, buttons to manually input recipients and to restrict the activity log may be provided allowing for customization of the "Here I Am" button by the wireless telephone owner. Such customization may be facilitated via conventional support for setting the operating parameters of wireless telephone **300**, which is known in the art, accordingly will not be further described.

In one embodiment, the "Here I Am" button may not be a button at all, but a voice activated function. The user of the wireless telephone only needs to initialize the wireless telephone to recognize the user's voice and speech patterns. Once initialized, the user only needs to speak into the wireless  
5 telephone "here I am", and the wireless phone will initiate the submission of the identity of the user, including the user's current location. Voice recognition initialization of electronic devices is known in the art, accordingly, will not be discussed in further detail.

Similarly, from an architectural perspective, wireless telephone **300**  
10 includes elements found in conventional wireless telephones, such as micro-controller **402**, digital signal processor (DSP) **404**, non-volatile memory **406**, general purpose input/output (GPIO) interface **408**, and transmit/receive (TX/RX) **412**. However, wireless telephone **300** advantageously includes global positioning system (GPS) **410**, which is equipped to provide a user of wireless  
15 telephone **300** his/her current location. Further, wireless telephone **300** is provided with enhanced wireless location application **416** incorporated with the teachings of the present invention. In alternate embodiments, the present invention may be practiced with wireless telephone **300** merely having access to an external GPS unit instead (as opposed to an integrated GPS unit as  
20 illustrated).

Except for the teachings of the present invention incorporated with wireless location application **416**, the functions and constitutions of the various

enumerated elements are known in the art, accordingly will not be further described.

**Figure 5** illustrates the operational flow of the relevant aspects of enhanced wireless location application **416**, in accordance with one embodiment.

5 As illustrated, in response to a user initiating submission of an identity of a user, including the user's current location by pressing the dedicated "Here I Am" function key **310**, wireless location application **416** calls messaging service **104** and establishes a communication connection, block **502**. Next, for the illustrated embodiment, wireless location application **416** submits a pre-established identity  
10 of the user and the mobile client, including the user's current location (provided by GPS unit **410**), block **504**.

The pre-established identification of the user and the device will be utilized to select the appropriate recipient/recipients, e.g. the pre-established identification of Justin is utilized to select Justin's parents and/or Justin's friends.

15 As described earlier, upon receipt of the identity of the user and the user's current location, messaging service **104** selects a recipient **106** based at least in part on the identity of the user, and transmits the identity of the user, along with the user's current location, and optionally, the accumulated activity log to the selected recipient **106** to provide information as to their whereabouts, block **506**.

20 In one embodiment, the messaging service **104** may access a navigation web site, for example, MapQuest™.com, Inc. of New York, NY, and retrieve location details such as, but not limited to, names of individual locations, e.g., the

user's current location is Johnny's Cafe at 1234 5<sup>th</sup> Avenue; previous location was Justin's department store at 5678 12<sup>th</sup> Avenue, and so forth.

Thus, it can be seen from the above description, a youth using a wireless telephone 300 incorporated with the present invention may notify their

5 parents/guardians or friends of their whereabouts with a simple operation. In other words, the present invention may be practiced to offer a "one click" "here I am" function, from a mobile client device, such as a wireless mobile telephone.

Alternatively, in one embodiment, the recipient may initiate the submission of the identity of the user, including the user's current location by requesting the  
10 submission from a remote device such as, for example, a conventional telephone of the parent/guardian. The request may be achieved by an empowered recipient who is among the eligible recipients that may be selected and not by people not associated with the user of the mobile client device. Additionally, the recipient who desires to initiate the submission may be required to have  
15 knowledge of the identity of the user, including a password associated with the intended user, in order for the requested information to be provided. Thus, a parent/guardian may learn of the activities and location of their youth without being intrusive and calling the youth to ask question about their activities.

As a result, youths are able to notify to their parents/guardians and each  
20 other of their whereabouts and activities simply and efficiently/effectively. Additionally, parents/guardians are provided a non-intrusive way of keeping track of the activities of the youths for their piece of mind.

**Figures 6 and 7** illustrate a perspective and an architectural view of an enhanced palm sized digital personal assistant (PDA) as a client device for practicing the present invention, in accordance with one embodiment. As illustrated, similar to a conventional palm sized PDA, PDA **600** includes control buttons **612** and display screen **602**. Architecturally, PDA **600** includes elements found in conventional PDA devices, such as RISC processor **702**, non-volatile memory **706**, general purpose input/output (GPIO) interface **708**, and transmit/receive (TX/RX) **712**. However, similar to the earlier described wireless telephone embodiment, PDA **600** includes global positioning system **710**, which is equipped to provide a user of PDA **600** his/her current location. Further, PDA **600** is provided with wireless web browsing application **716** designed for a wireless PDA device with limited computing power, communication bandwidth and display capability. As in the earlier described wireless telephone embodiment, in alternate implementations, PDA **600** may be merely provided with access to an external GPS unit instead (as opposed to an integrated GPS unit as illustrated).

Alternatively, because of the increased memory capabilities of the PDA **600** over the wireless mobile telephone **300**, in one embodiment, the GPS **410** may be equipped to track previous locations as well as current location, including a duration of time spent at the locations. In this embodiment, the PDA **600** accumulates an activity log and stores the accumulated activity log in memory **706**. The user may download the accumulated activity log to the messaging service **104** along with the identity and the user's current location. Alternatively,

the PDA 600 may inform the user that a download from the PDA 600, may be required due to space availability in memory 706. Tracking locations and durations of time spent at the tracked locations are well known and commonly associated with GPS devices, accordingly, will not be discussed in further detail.

5           Rendered on display screen 602 is a service request "Here I Am" "home" page. For the illustrated embodiment, the "Here I Am" "home" page includes a "drop down" menu of recipients 604, "Here I Am" button 606, and current location display 608. Thus, under this embodiment, a user of PDA 600 may manually select one or more recipients of the identity of the user and the user's current  
10       location, and optionally, an accumulated activity log of the user, from the "drop down" menu 604. The recipients may include such recipients as parents/guardians and friends of the user.

          The recipients included in "drop down" menu 604 for selection may be predetermined and set up by the user. Except for submitting and transmitting the  
15       identity of the user, including the current the user's current location, and optionally, the accumulated activity log, the functions and constitutions of the illustrated elements are known in the art, accordingly will not be further described.

**Figure 8** illustrates the operational flow of the relevant aspects of wireless  
20       web browsing application 716 executing the "Here I Am" "home" page, in accordance with one embodiment. As illustrated, in response to a user initiating a "Here I Am" "home" page (e.g. by selecting a "Here I Am" icon (not illustrated)), application 716 causes a call to be placed to messaging service 104 (e.g. by an



underlying communication service), and a communication connection (such as a HTTP connection using TCP/IP) be established, block **802**. Next, application **716** retrieves the "Here I Am" "home" page from messaging service **104**, block **804**.

Thereafter, the code associated with the retrieved "Here I Am" "home" page (e.g.

5 an applet downloaded with the "home" page) monitors for user inputs or interactions with the "Here I Am" "home" page, block **806**.

Upon detection of an user input, the associated code further determines if the user has selected the "Here I Am" button **606**, block **812**. If not, it is assumed that the user is interacting with "drop down" recipient menu **604**, block **814**. The  
10 selected recipient field **604** is updated accordingly, depending on the user's inputs. On the other hand, if the user has selected the "Here I Am" button **606**, the associated code submits an identity of the user, including the user's current location, and optionally, the accumulated activity log (using the established communication connection), block **816**.

15 For the illustrated embodiment, it is further contemplated that messaging service **104** may resolve the geographical information received from PDA **600** to a qualitative description of the current location, e.g. "5<sup>th</sup> & Union", **608**.

Messaging service **104** may do so by accessing a geographic information file (GIF) (not shown), using the coordinates of the current location. GIF is known in  
20 the art. This further assists the recipient in confirming the location of the user.

In one embodiment, as discussed above with respect to the wireless telephone **300**, messaging service **104** may resolve the geographical information received from PDA **800** by accessing a navigation web site, **610**.

As a result, youths are able to notify to their parents/guardians and each other of their whereabouts and activities simply and efficiently/effectively using PDAs, as well. Additionally, parents/guardians are provided a non-intrusive way of keeping track of the activities of the youths for their peace of mind.

5           **Figure 9** illustrates an example server suitable for use to host messaging service **104** of **Fig. 1**, in accordance with one embodiment. As shown, server **900** includes one or more processors **902** and system memory **906**. Additionally, computer system **900** includes mass storage devices **907** (such as diskette, hard drive, CDROM and so forth), GPIO **908** (for interfacing with I/O devices such as

10   keyboard, cursor control and so forth) and communication interfaces **912** (such as network interface cards, modems and so forth). The elements are coupled to each other via system bus **914**, which represents one or more buses. In the case of multiple buses, they are bridged by one or more bus bridges (not shown). Each of these elements perform its conventional functions known in the art. In

15   particular, system memory **904** and mass storage **906** are employed to store a working copy and a permanent copy of the programming instructions implementing messaging service **104**. Except for its use to host the novel messaging service of the present invention, the constitution of these elements **902-914** are known, and accordingly will not be further described.

20           **Figure 10** illustrates a data structure suitable for use to store data associated with identity of users, last submitted locations of users, and recipients to facilitate practice of the present invention. As illustrated, table **1000** includes a column **1002** for storing an identifier for each "enrolled" user. In addition, table

**1000** further includes a number of columns **1004** for storing the various basic information associated with an "enrolled" user, such as the user's name, user's "signature", and password associated with the user, e.g., user name: Justin; Justin's password: DaDa, and so forth. In particular, preferably a column is

5 provided to store one or more indicators for the preferred mode of communication.

Table **1000** also includes a number of columns **1006-1010** for storing the eligible recipients provided by the user, and their "properties". The recipient may be placed in columns for family **1006**, such as parents/guardians, friends **1008**,

10 and other people **1010** that the user may want to add to provide "Here I Am" information. Additionally, table **1000** includes other columns for storing the various early discussed properties, such as the duration a recipient is eligible to receive the location information, whether the recipient is eligible to contact messaging service **104** to receive the location information.

15 Table **1000** is illustrated as a single table for ease of understanding. As those skilled in the art will appreciate, a data structure involving multiple tables may be employed for storing the various data. In certain columns, such as recipients, pointers to the actual data, for example, to actual data such as the recipient's email address or their wireless telephone numbers, may be

20 preprogrammed.

**Figure 11** illustrates the operational flow of the relevant aspect of messaging service **104**, in accordance with one embodiment. As illustrated, upon invocation, messaging service **104** awaits for a submission of an identity of

a user, including the user's current location, and optionally, an accumulated activity log of the user, or a request for its "Here I Am" "home" page, **1106** and **1102**. In response to a request for the "Here I Am" "home" page **1104**, messaging service **104** returns the "Here I Am" "home" page as requested, **1104**.

5    Thereafter, the process continues at **1102** again.

However, if a submission of an identity of a user, including the user's current location, and optionally, the accumulated activity log of the user, is received instead, as described earlier, messaging service **104** selects one or more recipient based at least on the received identity of the user, **1108**.

10   Furthermore, the current location of the user may be added to previously received and stored last locations of the user by the messaging service **104**, including any accumulated activity logs that are also received. Then, the messaging service **104** transmits the identity of the user together with the user's current location, and optionally, accumulated activity log of the user, to the  
15   selected recipients **1110**.

In one embodiment, in order to transmit parts or all of the information, including the optional activity log of the user, the messaging service **104** may require a password from the selected recipient. Alternatively, in another embodiment, the messaging service **104** may transmit all of the information,  
20   including the optionally accumulated activity log of the user if the selected recipient is a parent/guardian corresponding to the identity of the user.

Additionally, if a transitory recipient is manually inputted, the identity of the user, along with the user's current location, and optional activity log, is transmitted to the manually inputted transient recipient.

As previously discussed, youths are able to notify to their  
 5 parents/guardians and each other of their whereabouts and activities simply and efficiently/effectively. Additionally, parents/guardians are provided a non-intrusive way of keeping track of the activities of the youths for their piece of mind.

Referring now back to **Figures 3-5**, in some embodiments, wireless  
 10 mobile phone **300** include various sensors (not shown) for sensing and collecting bio-metric data of the user holding wireless mobile phone **300** for various bio-metrics. Examples of these bio-metric data include heart rate data of the user. Wireless mobile phone having integrated bio-metric sensors, such as heart rate sensors, is the subject of co-pending U.S. Application, number <to be assigned>,  
 15 entitled "A Wireless Mobile Phone Having An Integrated Heart Rate Monitor", filed contemporaneously with the present invention. The co-pending application is hereby fully incorporated by reference.

For some of these embodiments, the earlier described submission of the user's current location is triggered (blocks **502-504** of **Fig. 5b**) is further based on  
 20 the bio-metric data collected by wireless mobile phone **300**, e.g. when the heart rate of the user holding phone **300** exceeds certain pre-determined threshold, or for other bio-metrics falling below a predetermined threshold. The predetermined not-to-exceed/not-to-fall-below threshold preferably is programmable by the user,

using any one of a number of configuration techniques known in the art. For presently preferred ones of these embodiments, the submission (block 504) also includes the bio-metric data.

Thus, it can be seen the present invention for facilitating a user in communicating his/her current location in a simple, efficient and effective way may also be beneficial to e.g. older citizens, who might want their current locations, including their bio-metric data, be easily communicated to a number of desired recipients, such as the users' doctors, nurses, spouses, children, co-workers and so forth. These recipients may be specified to messaging service 104 as earlier described.

Accordingly, methods and apparatuses for people to simply communicate their location and activity information has been described. While the present invention has been described in terms of the above illustrated embodiments, in particular, being especially useful to youths, those skilled in the art will recognize that the invention is not limited to the embodiments described. The present invention can be practiced with modification and alteration within the spirit and scope of the appended claims such as, practiced by adults. Thus, the description is to be regarded as illustrative instead of restrictive on the present invention.